

CLAIMS

We claim:

1. A gasification reactor vessel comprising:

a pressure shell, said pressure shell having an elongated encircling body wall and shell ends at each of opposite ends of said body wall;

a plurality of cooling conduits extending circularly around an inner side of said body wall, said conduits being fixedly connected to said inner side, interior spaces of said cooling conduits being in communication with said body wall inner side;

a fluid supply conduit communicating with common ends of said cooling conduits for supplying a coolant to said cooling conduits;

a fluid discharge conduit communicating with opposite ends of cooling conduits for outletting heated coolant from said cooling conduits;

a layer of thermally protective material contactingly covering said cooling conduits; and anchor ties fixedly connected to said cooling conduits and embedded in said protective material covering.

2. A gasification reactor vessel according to claim 1, wherein said thermally protective material covering is a refractory material.

3. A gasification reactor vessel according to claim 2, wherein each cooling conduit comprises a pair of spaced webs fixedly connected at common ends of each to said body wall inner side, and a bridging piece joining opposite ends of said webs.

1           4. A gasification reactor vessel according to claim 3, wherein said cooling  
2     conduits are fixedly connected to said body wall inner side at circularly spaced locations  
3     thereon.

1           5. A gasification reactor vessel according to claim 4, wherein said refractory  
2     material layer fills spaces between adjacent cooling conduits and covers said body wall inner  
3     side between said adjacent cooling conduits.

1           6. A gasification reactor vessel according to claim 5, wherein anchor ties are  
2     fixedly connected to said body wall inner side in the spaces between adjacent cooling conduits  
3     and are embedded in the refractory material layer filling said spaces.

1           7. A gasification reactor vessel according to claim 3, wherein the cooling  
2     conduits extend around the inner side of said body wall with the webs of each fixedly  
3     connected to a web of adjacent cooling conduits.

1           8. A gasification reactor vessel according to claim 7, wherein said cooling  
2     conduits are fixedly connected to the body wall inner side and to each other with gastight and  
3     watertight connections.

1           9. A gasification reactor vessel according to claim 4, wherein said cooling  
2     conduits are fixedly connected to the body wall inner side with gastight and watertight  
3     connections.

1 10. A gasification reactor vessel according to claim 3, further comprising a  
2 refractory lining covering said refractory layer.

1 11. A gasification reactor vessel according to claim 10, wherein said refractory  
2 lining comprises a brickwork lining.

1 12. A gasification reactor vessel according to claim 1, wherein a cross section  
2 of said cooling conduits is one of an oval, a semicircle and a polygon.

1 13. A gasification reactor vessel according to claim 1, further comprising a  
2 caked slag layer covering said thermally protective material layer.

1 14. A method for cooling a gasification reactor vessel having a pressure shell  
2 and a refractory lining disposed at an inner side of a gasification pressure shell, comprising:  
3 supplying a flow of coolant at a pressure greater than a gasification operating pressure  
4 in a reactor space of said pressure vessel through conduits positioned intervening the refractory  
5 lining and an inner side of the pressure shell with the refractory lining in contact with said  
6 conduits, the conduits being fixedly connected to said inner side so that the coolant flow is  
7 isolated from the refractory lining and no pressure of said coolant flow is transmitted to said  
8 refractory layer.

1 15. A method according to claim 14, comprising disposing the conduits  
2 lengthwise of the pressure vessel, and in an encircling array at said inner side.

1 ~~16. A method according to claim 15, comprising anchoring said refractory~~  
2 ~~layer to said conduits with anchoring ties.~~

1 17. A gasification reactor vessel comprising:  
2 a cylindrical pressure shell;  
3 a plurality of channel members extending lengthwise of said pressure shell in a circular  
4 array around an inner side of said pressure shell, said channel members being fixedly  
5 connected to said inner side to provide a corresponding plurality of closed coolant flow  
6 courses;  
7 an encircling protective layer of refractory material covering said channel members and  
8 being in heat conductive contact with said channel members; and  
9 an encircling lining of at least one of a caked slag and a refractory covering said  
10 protective layer.

1 18. A gasification reactor vessel according to claim 17, wherein the channel  
2 members are connected to said inner side of said pressure shell with gastight and watertight  
3 welded connections.  
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